REMARKS

This application has been carefully considered in connection with the Final Office Action dated March 17, 2009. Reconsideration and allowance are respectfully requested in view of the following.

Summary of Rejections

Claims 21-24, 26, 28, 30, and 35-37 were rejected under 35 USC § 102.

Claims 1-20, 25, 27, 29, and 31-34 were rejected under 35 USC § 103.

Summary of Response

Claims 1-5, 7-16, 18, 19, 21-23, 25, 28, and 30-38 were previously presented

Claims 6, 17, 20, 24, 26-27, and 29 remain as originally filed.

Summary of Claims Pending:

Claims 1-38 are currently pending following this response.

Response to Rejections

The pending application discloses a system by which functioning computer software may be transparently and non-intrusively monitored without encapsulating the software and without degrading the performance of the software. In particular, the pending application discloses a monitor attaching to and reading from memory blocks created by other applications without disturbing the function of the other applications. The monitor does not create its own shared

memory, but merely attaches to memory created by the applications to be monitored. The Final Office Action rejected the pending claims as being anticipated by or obvious over Nace et al., U.S. Pub. No. 2004/0268363 ("Nace"). However, Nace does not teach or suggest **monitoring** software and certainly do not teach **non-intrusively monitoring** software. Rather, Nace is directed to interprocess communications.

The system of Nace provides a communication engine such that a plurality of application components or applications can create shared memory that each can access. The communication engine provides a mechanism to allow one application or process to access the shared memory of another application or process. The system disclosed by Nace provides that each application or process has a shared memory space that is accessible only by itself and the communication engine. If another process needs to access this shared memory space, it notifies the communication engine which then accesses the appropriate shared memory space. Thus, Nace inhibits multiple applications from attempting to access the same memory space at the same time by limiting the access to any given shared memory to the process to which the memory belongs and to the communication engine which provides access to all other processes that may desire access. Thus, the communications engine reduces memory contention or data corruption in the overall shared memory space. (See Nace, ¶ [0025]). The communication engine does not non-intrusively monitor the contents of a shared memory block, but may lock the memory block, thereby preventing the owning application from accessing the memory block or space. (See Nace, ¶ [0030]). The communications engine may also write to the shared memory space. (See, e.g., Nace, ¶¶ [0035]-[0042]). Additionally, the communications engine also may register its own shared memory block. (See Nace, ¶ [0024]). Thus, it appears clear that Nace does not disclose a

system for non-intrusively monitoring an application or application variable, but merely a system to promote and facilitate communication between various processes through a shared memory.

These distinctions, as well as others, will be discussed in greater detail in the analyses of the pending claims that follow.

Response to Rejections under 35 U.S.C. § 102

Claim 21:

Claim 21 was rejected under 35 U.S.C. § 102(e) as being anticipated by Nace et al., U.S. Pub. No. 2004/0268363 ("Nace").

I. Nace does not disclose a system for non-intrusively monitoring variables during operation of an application.

Claim 21 recites "[a] system for non-intrusively monitoring variables during operation of an application." Nace does not disclose non-intrusively monitoring variables during operation of an application, but rather discloses a system for interprocess communications.

The general rule is that a preamble in a claim is not limiting. *DeGeorge v. Bernier*, 768 F.2d 1318, 226 USPQ 758, 761 n.3 (Fed. Cir. 1985) ("Generally, and in this case, the preamble does not limit the claims."). However, when the patentee uses the claim preamble to recite structural limitations of his or her claimed invention, the Patent Office and courts give effect to that usage. *Corning Glass works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257, 9 USPQ2d 1962, 1966 (Fed. Circ. 1989). For example, where the expression in the claim preamble results in a manipulative difference in the steps or structure of the claim, the preamble likely will be considered limiting. *Bristol-Meyers Squibb co. v. Ben Venue labs. Inc.*, 246 F.3d

1368, 58 USPQ2d 1508, 1513 (Fed. Cir. 2001). The CCPA expressed the general rule relating to interpreting claim preambles in *Kropa v. Robie*, 187 F.2d 150, 88 USPQ 478 (C.C.P.A. 1951). In *Kropa*, the CCPA stated:

> The preamble has been denied the effect of a limitation where ... [the claim] apart from the introductory clause completely defined the subject matter [of the invention], and the preamble merely stated a purpose or intended use of that subject matter. On the other hand, in those ... cases where the preamble to the claim ... was expressly or by necessary implication given the effect of a limitation, the introductory phrase was deemed essential to point out the invention defined by the claim or count. In the latter class of cases, the preamble was considered necessary to give life, meaning and vitality to the claims.[1]

In *Perkins Elmer Corp. v. Computervision Corp.*, the claim recited as follows:

> 1. A unity magnification catoptric [i.e., using only mirrors] image-forming system comprising at least one concave mirror and at least one convex mirror . . . .[2]

The Federal Circuit stated that claim 1 differed from the prior art because it was directed to unity magnification and the prior art was directed to a 2-to-1 magnification. In addition, claim 1 recited an image-forming system, whereas the prior art involved a viewing system. Even though these limitations appeared in the preamble of claim 1, the federal circuit still held that the claim was nonobvious over the prior art based on these limitations. The court reasoned that the "system of claim 1 is one of unity magnification and is image forming. Those limitations appear in the preamble, but are necessary to give meaning to the claim and properly define the invention." *Perkin Elmer corp. v. Computervision corp.*, 732 F.2d 888, 221 USPQ 669, 675-676

[1] *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 480-481 (C.C.P.A. 1951).

[2] *Perkin Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 221 USPQ 669 (Fed. Cir. 1984).

(Fed. Cir. 1984) (citing *In re Bulloch*, 604 F.2d 1362, 1365, 203 USPQ 171, 174 (C.C.P.A. 1979); *Kropa v. Robie*, 187 F.2d 150, 151-52, 88 USPQ 478, 480-81 (C.C.P.A. 1951).

Similarly, in *On Demand Machine Corp. v. Ingram Industries, Inc.*,[3] the Federal Circuit held that the preamble of a claim necessarily limits the claim when the preamble recites the framework of the invention. The litigation concerned United States Patent No. 5,465,213 (the Ross patent) owned by On Demand Machine Corp. Claim 7 of the Ross patent recited the following:

> 7. A method of high speed manufacture of a single copy of a book comprising the steps of:
> [1] storing the text of a plurality of books in a computer,
> [2] storing a plurality of covers for books to be printed in said computer, said covers being stored in a bit mapped format,
> [3] storing sales information relating to said plurality of books in a computer,
> [4] providing means for a customer to scan said sales information,
> [5] enabling the customer to select which book or a portion of a plurality of books,
> [6] commanding a computer to print the text of said selected books and a cover in response to said selection,
> [7] retrieving the text of said selected books from a computer,
> [8] printing the text of said selected books on paper pages, and
> [9] binding said paper pages together to form said selected one of said books.[4]

According to the Federal Circuit:

> We conclude that the preamble in this case necessarily limits the claims, in that it states the framework of the invention, whose purpose is rapid single-copy printing of a customer's selected book as stated in clauses [5], [6], [7], and [8]. The high speed manufacture of a single copy is fundamental to the Ross invention,

[3] *On Demand Machine Corp. v. Ingram Industries, Inc.*, 442 F.3d 1331, 78 USPQ2d 1428 (Fed. Cir. 2006), *cert. denied*, 127 S.Ct. 683 (2006).

[4] *Id*, at 1430

> for the specification highlights that the customer may have a printed and bound copy within "three to five minutes." . . . While ODMC points out that Lightning Source's web site touts "in one week, we craft 70,000+ books, one at a time," such mass production is not the invention described and claimed by Ross.[5]

Claim 23 of the pending application does not merely recite an intended use, but, similar to the Ross claim, states the framework of the invention reciting "[a] system for non-intrusively monitoring variables during operation of an application." This limitation is not disclosed by Nacc.

Furthermore, even if the preamble of claim 23 is not read to limit the claim, it still provides a framework by which the deficiencies of Nace are highlighted. A system according to claim 23 provides for non-intrusively monitoring variables during the operation of an application. The elements of Nace identified by the Final Office Action as being equivalent to the limitations of claim 23 are not equivalent as discussed in detail below and do not result in a system of non-intrusively monitoring variables during the operation of an application when combined, but, rather, result in a system for interprocess communications. Thus, it becomes obvious that Nace does not disclose the elements of claim 23 since when those identified elements of Nace are combined, the result is not a system for non-intrusively monitoring variables during the operation of an application.

II. Nace does not disclose obtaining a value for one or more of the plurality of variables written to the address space by the application during the **real-time** operation of the application.

Claim 21 of the pending application recites in part "the module performs attaching to an address space used by the application during real-time operation to obtain a value for one or

[5] *Id*, at 1437

more of the plurality of variables written to the address space by the application during the real-time operation of the application using the offset." In other words, a system according to claim 21 of the pending application allows variable values of an application to be non-obtrusively monitored in **real-time**. No interrupts are required to be inserted into the application code nor are any conditions placed on the application's ability to manipulate its data. Rather, the module merely attaches to the memory of the application and occasionally passively obtains values for one or more variable values. However, Nace discloses a system of shared memory resources in which a portion of shared memory space allocated to one process is locked to permit a requesting process to access data. (See, for example, Abstract of Nace). Thus, the operation of the target process is interfered with by the sharing mechanism since the target process is prevented from manipulating its data as it needs to in order to allow another process to access the data. This results in the operation of the target process being interrupted, therefore, any values for variables obtained by the requesting process is not performed in real-time, but, rather, requires that the other process be temporarily interfered with or even halted while the requesting process accesses the target processes data.

In the Examiner's response to Applicant's arguments on page 31, the Final Office Action addresses the Applicant's argument that "Nace does not disclose obtain a value for one or more of the plurality of variables written to the address space by the application during the real-time operation of the applications." The Final Office Action states, on page 31, that "Nace teaches 'an inter-process communications platform enables individual processes to request and exchange data in a shared memory space' (e.g., recited in Abstract, Lines 1-3); and 'when one process requests access to a variable, pointer or other data generated by another process, the request is mediated by the communications engine" (e.g., recited in Abstract, Lines 9-12) (emphasis in

original). The Applicant respectfully disagrees with the Final Office Action's characterization of Nace. The Final Office Action appears to ignore the requirement that obtaining "a value for one or more of the plurality of variables written to the address space by the application" must be obtained during the **real-time** operation of the application. Nace discloses that "if the administrative memory space 106 is locked, full or otherwise unable to provide access, the requesting process in the set of processes 102a, 102b ... may enter a wait state or otherwise delay the rendezvous process." (See, Nace, ¶ [0021]). Thus, Nace is **not** real-time and is certainly not non-intrusive, since the application must wait or delay, thereby interrupting "real-time" performance.

III. Nace does not disclose "attaching to an address space."

Claim 21 of the pending application recites in part "the module performs attaching to an address space used by the application during real-time operation to obtain a value for one or more of the plurality of variables written to the address space by the application during the real-time operation of the application using the offset." The module does not create a shared memory space, but merely attaches to the address space created by an application. Furthermore, the module does not write to the memory, but only reads the contents of the memory.

The Final Office Action continues to allege that Nace provides an application and a module and points to figure 2 and paragraph [0019] of Nace as disclosing this teaching. The Final Office Action equates one of processes 102a and 102b with the application as recited in claim 21 and communication engine 108 with the module as recited in claim 21. However, the communication engine 108 in Nace does not attach to the shared memory space 104, but rather is able to create shared memory blocks and populate memory blocks for communication with other

processes that are sharing the memory space. (See, for example, Nace, paragraphs 24, 25, 33, and 35). Furthermore, the communication engine 108 does not merely passively attach to an address space thereby allowing for non-intrusive monitoring of an application variable. Rather, the communication engine 108 can lock the shared memory block, create new shared memory blocks, and write to shared memory blocks. (See, for example, Nace abstract and paragraphs 19 and 24). Additionally, locking the shared memory block is not non-intrusive.

IV. Nace does not disclose using the offset to obtain a value for one or more of the plurality of variables written to the address space by the application during the real-time operation of the application.

Claim 21 of the pending application recites in part "attaching to an address space used by the application during real-time operation to obtain a value for one or more of the plurality of variables written to the address space by the application during the real-time operation of the application using the offset." The Final Office Action continues to rely on paragraphs [0022] and [0039] of Nace to disclose this feature. However, Nace does not disclose using the offset to obtain a value for a variable written to the address space. A text string search of Nace for "offset" produced exactly two results. One occurrence is in paragraph [0022] and the other is in paragraph [0039]. In paragraph 22, Nace states that "[o]ther data 116 related to the newly-generated shared memory block in the set of memory blocks 114a, 114b . . . may also be loaded into administrative memory 106, which data may include for instance file handles, variables, address offset or other memory mapping data and other information related to the requesting process in the set of processes 102a, 102b . . . and its corresponding memory block." Thus, in paragraph 22, Nace merely discloses that an "address offset" may be part of the data loaded into administrative memory 106, but does not disclose how the offset may be utilized. In fact, the

offset is not even required to be stored, but is merely an example of data that may be stored into administrative memory 106. In paragraph 39, Nace states that "[w]hen a memory block with the set of memory blocks 114a, 114b . . . or a segment thereof is released, the buddy of that block may be efficiently recaptured as well, by computation of the offset or other known relation to its associated buddy block or segment." It is clear that the offset is not used to determine an address space to obtain a variable written to the address space by an application, but rather is used to determine the address of another memory block that is related (e.g. buddy block) to a released memory block so that the "buddy block" also may be released or recaptured by the system.

For at least the reasons established above in sections I-IV, Applicant respectfully submits that independent claim 21 is not anticipated by Nace and respectfully requests allowance of this claim.

Claims Depending from Claim 21:

Claims 22-24, 26, 28, and 30 were rejected under 35 U.S.C. § 102(e) as being anticipated by Nace.

Dependent claims 22-24, 26, 28, and 30 depend directly or indirectly from independent claim 21 and incorporate all of the limitations thereof. Accordingly, for at least the reasons established in sections I-IV above, Applicant respectfully submits that claims 22-24, 26, 28 and 30 are not anticipated by Nace and respectfully requests allowance of these claims.

Claim 35:

Claim 35 was rejected under 35 U.S.C. § 102(e) as being anticipated by Nace.

Claim 35 includes limitations substantially similar to the limitations discussed in sections I and II above. For example, claim 35 recites "a COBOL monitor module stored on a computer-readable medium that shares the shared memory area with the COBOL program through the technical layer, and the COBOL monitor module reads the program values stored in the shared memory area by the COBOL program during real-time operation of the COBOL program." Furthermore, claim 35 recites "[a] system for non-intrusively monitoring COBOL application values." Accordingly, the arguments of sections I and II are hereby repeated for claim 35.

V. Nace does not disclose COBOL.

Claim 35 recites in part a "COBOL program" and a "COBOL monitor." Nace does not disclose COBOL. The Final Office Action alleges that paragraph 28 of Nace discloses COBOL. However, paragraph 28 of Nace merely states that "it will be appreciated that different types of code or instruction may be used." Nace does not specify that COBOL is one of the different types of code that may be used. A text string search for "cobol" in Nace produced no results.

In the response to the Applicant's previous arguments, the Final Office Action, on page 33, states that Nace discloses "different types of code or instruction may be used." The Final Office Action, further states that "Kashima teaches 'in the case of CORBA, the connectivity with current system is kept high because of its mainframe and COBOL support'" and that "'the CORBA specification defines IDL, control objects such as ORB and BOA, mapping to languages such as C++ and COBOL …' (recited in Section 2. The Concept of CORBA …)." However, claim 35 was rejected under 35 U.S.C. § 102 as anticipated by Nace, therefore

reference to other prior art is improper. Furthermore, if the Final Office Action intended to reject claim 35 under 35 U.S.C. § 103, no reasoned statement as to why Nace should be combined with Kashima and/or "The Concept of CORBA" in the manner proposed is provided by the Final Office Action.

VI. Nace does not disclose a technical layer.

Claim 35 recites in part that "a COBOL program stored on a computer-readable medium that creates a shared memory are through a technical layer" and "a COBOL monitor module stored on a computer-readable medium that shares the shared memory area with the COBOL program through the technical layer." COBOL applications generally cannot create or access shared memory areas. The technical layer provides a mechanism for the COBOL program to create a shared memory area and for the COBOL monitor module to access the shared memory area. Nace does not disclose a technical layer.

The Final Office Action alleges that the specification states that "the technical layer provides a plurality of routines including a shared memory routine and a socket routine" relying on paragraph [0026] of the pending application. However, the Final Office Action appears to ignore many other references in the specification that describe a technical layer, including, for example, paragraphs [0027] and [0036]-[0043] which describe a technical layer socket routine. Paragraph [0055] of the pending application states that "when COBOL is employed as the programming language for encoding the applications 20 and 22 a technical layer may be employed to provide convenient access to operating system socket services." The Final Office Action alleges that the memory manager 118a or 118b in Nace is a technical layer. However, the memory manager 118a or 118b does not provide a mechanism for allowing COBOL programs

and modules to create or access share memory areas. Furthermore, as noted above, Nace does not disclose COBOL and, therefore, has no need of a technical layer that provides a mechanism for the COBOL program to create a share memory area and for the COBOL monitor module to access the shared memory area. Nace does not disclose a technical layer.

For at least the reasons established above in sections I, II, V, and VI Applicant respectfully submits that independent claim 35 is not anticipated by Nace and respectfully requests allowance of this claim.

Claims Depending from Claim 35:

Claims 36 and 37 were rejected under 35 U.S.C. § 102(e) as being anticipated by Nace.

Dependent claims 36 and 37 depend directly or indirectly from independent claim 35 and incorporate all of the limitations thereof. Accordingly, for at least the reasons established in sections I, II, V, and VI above, Applicant respectfully submits that claims 36 and 37 are not anticipated by Nace and respectfully requests allowance of these claims.

Response to Rejections under 35 U.S.C. § 103

Claim 1:

Claim 1 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Nace in view of Sridharan et al., *On Building non-Intrusive Performance Instrumentation Blocks for CORBA-based Distributed Systems,* March 2000, IEEE ("Sridharan").

Claim 1 includes limitations substantially similar to the limitations discussed in sections I-III above. For example, claim 1 recites "a first module stored on a computer-readable medium

that shares and attaches to the shared memory area that is used by the at least one application during real-time operation, the first module reads application valued from the shared memory area that have been stored in the shared memory area by the at least one application during real-time operation." Claim 1 also recites "[a] system for non-intrusively monitoring an application." Accordingly, the arguments of sections I-III are hereby repeated for claim 1. Sridharan fails to cure the deficiencies in Nace identified and discussed above in sections I-III.

For at least the reasons established above in sections I-III, Applicant respectfully submits that independent claim 1 is not taught or suggested by Nace in view of Sridharan and respectfully requests allowance of this claim.

Claims Depending from Claim 1:

Claims 2-4 and 6-11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nace in view of Sridharan.

Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Nace in view of Sridharan and further in view of Hiroshi Kashima, *An Approach for Constructing Web Enterprise Systems on Distributed Objects*, Jan., 2000, IBM ("Kashima").

Dependent claims 2-11 depend directly or indirectly from independent claim 1 and incorporate all of the limitations thereof. Accordingly, for at least the reasons established in sections I-III above, Applicant respectfully submits that claims 2-11 are also not taught or suggested by Nace in view of Sridharan and respectfully requests allowance of these claims. Applicant respectfully submits that Kashima does not cure the deficiencies of Nace in view of Sridharan as noted above.

Claim 12:

Claim 12 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Nace in view of Sridharan.

Claim 12 includes limitations substantially similar to the limitations discussed in sections I-IV above. For example, claim 12 recites "running an application in a real-time manner," "writing, by the application, the application values in the memory area during the operation of the application," and "reading, by a monitor, the memory area used by the application to obtain the application values." Claim 12 also recites "[a] method of non-intrusively monitoring operation of an application." Accordingly, the arguments of sections I-IV are hereby repeated for claim 12.

For at least the reasons established above in sections I-IV, Applicant respectfully submits that independent claim 12 is not taught or suggested by Nace in view of Sridharan and respectfully requests allowance of this claim. Sridharan does not cure the deficiencies in Nace.

Claims Depending from Claim 12:

Dependent claims 13-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nace in view of Sridharan.

Dependent claims 13-20 depend directly or indirectly from independent claim 12 and incorporate all of the limitations thereof. Accordingly, for at least the reasons established in sections I-IV above, Applicant respectfully submits that claims 13-20 are not taught or suggested by Nace in view of Sridharan and respectfully requests allowance of these claims. Sridharan does not cure the deficiencies in Nace.

Claims Depending from Claim 21:

Dependent claims 25 and 31-32 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Nace in view of Jie Tao et al., *Visualizing the Memory Access Behavior of Shared Memory Applications on NUMA Architectures,* Springer-Veriag Berlin Heidelberg 2001, pp. 861-870 ("Tao-2").

Dependent claims 27 and 29 were rejected under 35 U.S.C. § 103(as) as being unpatentable over Nace in view of Huang et al., *Operating System Support for Flexible Coherence in Distributed Shared Memory,* 1996, IEEE ("Huang").

Dependent claims 33-34 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nace in view of Tao-2 and further in view of Tao et al, *Understanding the Behavior of Shared Memory Applications Using the SMiLE Monitoring Framework,* March 2000, IEEE ("Tao-1").

Dependent claims 25, 27, 29, and 31-34 depend directly or indirectly from independent claim 21 and incorporate all of the limitations thereof. Accordingly, for at least the reasons established in sections I-IV above, Applicant respectfully submits that claims 25, 27, 29 and 31-34 are not taught or suggested by Nace alone or in combination with Tao-1, Tao-2, or Huang and respectfully requests allowance of these claims. None of Tao-1, Tao-2, or Huang cure the deficiencies of Nace.

Claims Depending from Claim 35:

Dependent claim 38 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Nace in view of Sridharan.

Dependent claim 38 depends directly or indirectly from independent claim 35 and incorporates all of the limitations thereof. Accordingly, for at least the reasons established in

sections I, II, V, and VI above, Applicant respectfully submits that claim 38 is not taught or suggested by Nace in view of Sridharan and respectfully requests allowance of this claim. Sridharan does not cure the deficiencies in Nace.

CONCLUSION

Applicant respectfully submits that the present application is in condition for allowance for the reasons stated above. If the Examiner has any questions or comments or otherwise feels it would be helpful in expediting the application, the Examiner is encouraged to telephone the undersigned at (972) 731-2288.

The Commissioner is hereby authorized to charge payment of any further fees associated with any of the foregoing papers submitted herewith, or to credit any overpayment thereof, to Deposit Account No. 21-0765, Sprint.

Respectfully submitted,

Date: May 18, 2009

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